Regulated Project

Post-Construction
Storm Water Quality Plan

For:

Project XYZ
Placer County

Planning Permit No. 1, Improvement Plan No. 1, Grading Permit No. 1, Building Permit No. 1
Lot No. 1

Prepared for:

Joe Jones
President
Development Inc.
XX C St.
Sacramento, CA 99999
999-999-9999

Prepared by:

Development Inc.
XX C St.
Sacramento, CA 99999
999-999-9999

Preparation Date: March 15, 2016
Approval Date:_____

Section 1 General Project Information

The undersigned owner of the subject property, is responsible for the implementation of the provisions of this plan, including ongoing operations and maintenance (O&M), consistent with the requirements of the West Placer Storm Water Quality Design Manual and the State of California Phase II Small MS4 General Permit (Order No: 2013-0001-DWQ). If the undersigned transfers its interest in the property, its successors-in-interest shall bear the aforementioned responsibility to implement the SWQP.

For all Regulated Projects (As identified in Form 1-2 below), the undersigned owner hereby grants access to all representatives of the Jurisdictional Agency for the sole purpose of performing O&M inspections of the installed treatment system(s) and hydromodification control(s) if any.

A copy of the final signed and fully approved SWQP shall be available on the subject site for the duration of construction and then stored with the project approval documentation and improvement plans in perpetuity.

Form 1-1 Project Identification and Owner's Certification

Project Site Address:	123 C Steet, Placer County, CA 99999	
Owner Name:	Joe Jones	
Title	President	
Company	Development Inc.	
Address	XX C St.	
City, State, Zip Code	Sacramento, CA 99999	
Email	Joe@email.com	
Telephone #	999-999-9999	
Signature	Date	
Engineer:*	Frank T. Storm	PE Stamp* (Required for all Regulated Projects)
Title	Civil Engineer	
Company	Development Inc.	
Address	XX C St.	
City, State, Zip Code	Sacramento, CA 99999	
Email	Frank@email.com	
Telephone #	999-999-9999	
Signature		
Brief Description of Project: (Attach additional sheets as necessary)	New office building and parking lot.	

* Not required for Small Projects as determined in Form 1-2 below. Project owners are responsible for ensuring that all storm water facilities are designed by an appropriately licensed and qualified professional.

Form 1-2 Project Category	
Development Category (Select all that apply)	
[1]**Small Project** – All projects, except LUPs, that create and/or replace between 2,500-5,000 ft^2 of impervious surface or detached single family homes that create and/or replace 2,500 ft^2 or more of impervious surface and are not part of a larger plan of development.	
[2]Enter total new and/or replaced impervious surface (ft^2)	
[3]**Regulated Project** – All projects that create and/or replace 5,000 ft^2 or more of impervious surface.	X
[4]**Regulated Redevelopment Project** with equal to, or greater than 50 percent increase in impervious area	
[5]**Regulated Redevelopment Project** with less than 50 percent increase in impervious area	
[6]Enter total pre-project impervious surface (ft^2)	0
[7]Enter total new and/or replaced impervious surface (ft^2)	9225
[8]**Regulated Road or linear underground/overhead project (LUP)** creating 5,000 ft^2 or more of newly constructed contiguous impervious surface.	
[9]Enter total new and/or replaced impervious surface (ft^2)	
[10]**Regulated Hydromodification Management Project** – Regulated projects that create and/or replace 1 acre or more of impervious surface. A project that does not increase impervious surface area over the pre-project condition is not a hydromodification management project.	
[11]Enter total new and/or replaced impervious surface (ft^2)	

Section 3 Regulated Projects

Section 3 forms are to be completed for all Regulated Projects.

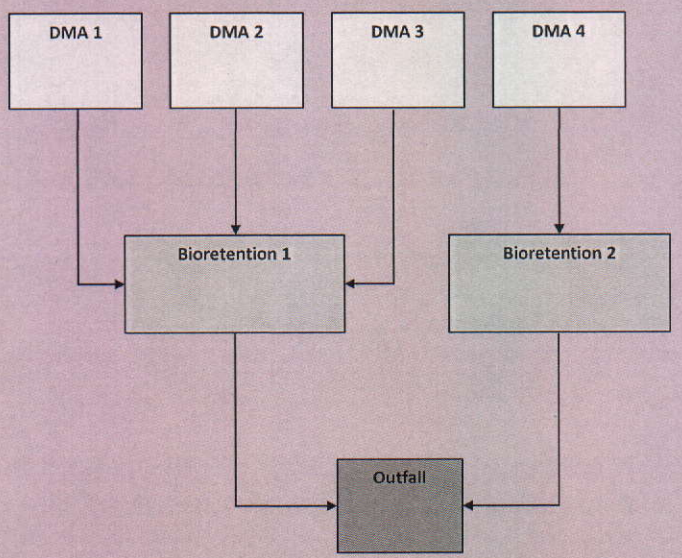
Form 3-1 Site Location and Hydrologic Features

Site coordinates: *Take GPS measurement at approximate center of site*	[1] Latitude	[2] Longitude	[3] Elevation (ft. above sea level)	[4] 85th Percentile, 24 Hour Design Storm Depth (in):
	xx	xx	1200	1.1

[5] Receiving waters *Name of stream, lake or other downstream waterbody to which the site runoff eventually drains*	Folsom Reservoir
[6] 303(d) listed pollutants of concern *Refer to State Water Resources Control Board website* www.waterboards.ca.gov/water_issues/programs/water_quality_assessment/#impaired	Mercury
[7] Is Project going to be phased? *If yes, ensure that the SWQP evaluates each phase with distinct DMAs, requiring LID BMPs to address runoff at time of completion.*	No

[8] *Use this form to show a conceptual schematic depicting DMAs and conveyance features connecting DMAs to the site outlet(s). An example is provided below that can be modified for the proposed project or a drawing clearly showing DMAs and flow routing may be attached.*

Example only
Modify for project specific SWQP
Use separate sheet if necessary

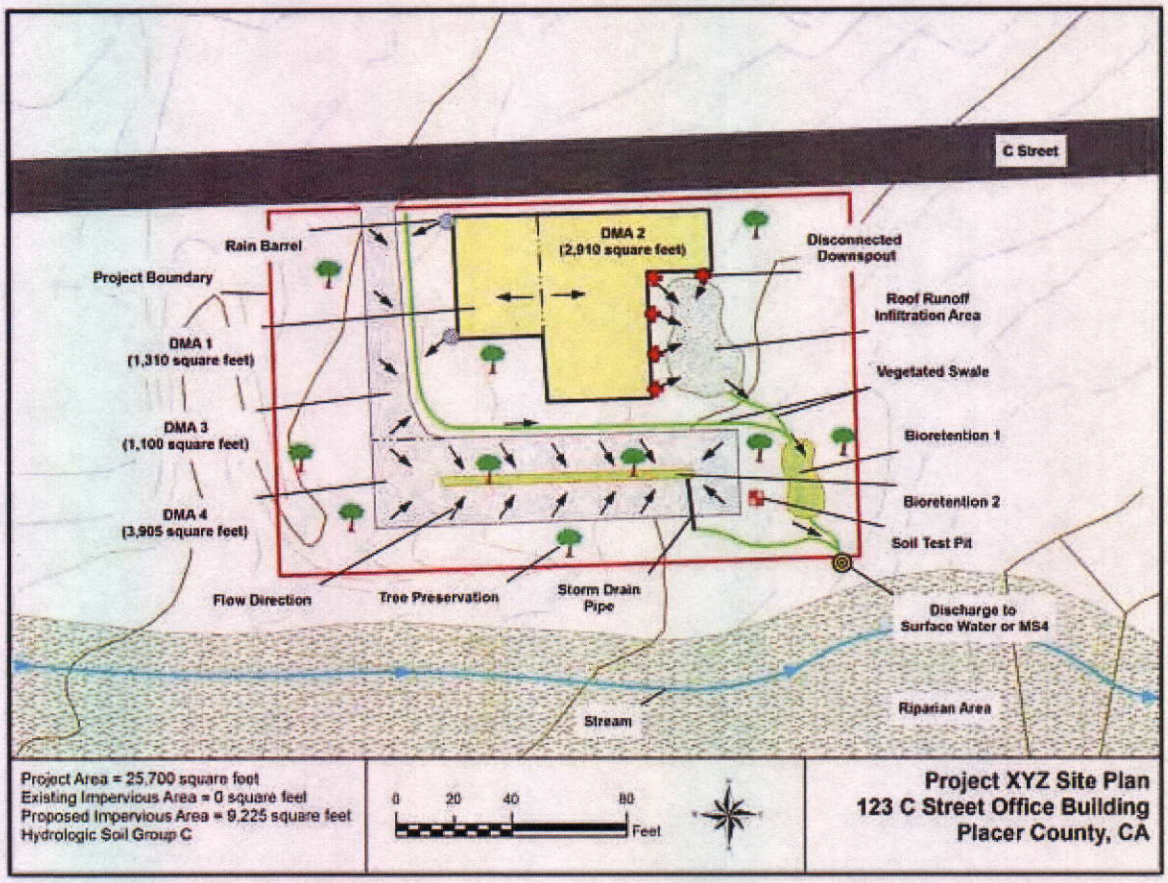


Form 3-2 Site Assessment and Layout Documentation

	Has this Item been considered in the Site Layout and depicted in the Site Plan?	
	Yes	Not Applicable (Include brief explanation)
Define the development envelope and protected areas, identifying areas that are most suitable for development areas to be left undisturbed.	X	
Concentrate development on portions of the site with less permeable soils and preserve areas that can promote infiltration.	X	
Limit overall impervious coverage of the site with paving and roofs.	X	
Set back development from creeks, wetlands, and riparian habitats.		NA Existing stream is too close to provide 500 ft setback
Preserve significant trees.	X	
Conform site layout along natural landforms.	X	
Avoid excessive grading and disturbance of vegetation and soils.	X	
Replicate the site's natural drainage patterns.	X	
Detain and retain runoff throughout the site.	X	

Attach a Site Plan that incorporates the applicable considerations above. Ensure that the following items are included in the Site Plan:

Site Boundary
Soil types and areal extents, test pit and infiltration test locations
Topographic data with 1 ft. contours
Existing natural hydrologic features (depressions, watercourses, wetlands, riparian corridors)
Environmentally sensitive areas and areas to be preserved.
Proposed locations and footprints of improvements creating new, or replaced, impervious surfaces
Potential pollutant sources and locations
Entire site divided into separate DMAs with unique identifiers
Existing and proposed site drainage network with flow directions and site run-on and discharge locations
Proposed design features and surface treatments used to minimize imperviousness and reduce runoff
Proposed locations and footprints of treatment and hydromodification management facilities
Design features for managing authorized non-stormwater discharges
Areas of soil and/or groundwater contamination
Existing utilities and easements
Maintenance areas


C Street
Rain Barrel
Project Boundary
DMA 1
(1,310 square feet)
DMA 3
(1,100 square feet)
DMA 4
(3,905 square feet)
DMA 2
(2,910 square feet)
Disconnected
Downspout
Roof Runoff
Infiltration Area
Vegetated Swale
Bioretention 1
Bioretention 2
Soil Test Pit
Flow Direction
Tree Preservation
Storm Drain
Pipe
Discharge to
Surface Water or MS4
Stream
Riparian Area
Project Area = 25,700 square feet
Existing Impervious Area = 0 square feet
Proposed Impervious Area = 9,225 square feet
Hydrologic Soil Group C
0
20
40
80
Feet
Project XYZ Site Plan
123 C Street Office Building
Placer County, CA

Form 3-3 Source Control Measures

Potential Pollutant Generating Activity or Source	Check One		Describe the source control measures to be implemented for each potential pollutant generating activity or source present on the project as listed in Appendix C and in the CASQA Fact Sheets. Include any special features, materials, or methods of construction that will be used.
	Present	Not Applicable	
Accidental spills or leaks	☑	☐	All materials will be stored inside and properly sealed.
Interior floor drains	☑	☐	Floor drains in basement connect to sanitary sewer.
Parking/storage areas and maintenance	☑	☐	Parking lot to be swept monthly.
Indoor and structural pest control	☑	☐	All materials will be stored inside and properly sealed.
Pools, spas, ponds, decorative fountains, and other water features	☐	☑	
Landscape/outdoor pesticide use	☑	☐	All manufacturer recommendations and regulations will be followed. Minimum amounts will be used.
Restaurants, grocery stores, and other food service operations	☐	☑	
Refuse areas	☑	☐	Trash bins to be closed and locked.
Industrial Processes	☐	☑	
Outdoor storage of equipment or materials	☐	☑	
Vehicle and equipment cleaning	☐	☑	
Vehicle and equipment repair and maintenance	☐	☑	
Fuel dispensing areas	☐	☑	
Loading docks	☐	☑	
Fire sprinkler test water	☑	☐	To be disposed in sanitary sewer.
Drain or wash water from boiler drain lines, condensate drain lines, rooftop equipment, drainage sumps, and other sources	☑	☐	To be disposed in sanitary sewer.
Unauthorized non-storm water discharges	☐	☑	
Building and grounds maintenance	☑	☐	Landscape maintenace to use minimal fertilizers.

The source control measures identified in this table shall be designed consistent with recommendations from the CASQA Stormwater BMP Handbook for New Development and Redevelopment[1], or from another equivalent manual.

[1] California Stormwater BMP Handbook New Development and Redevelopment. California Stormwater Quality Association (CASQA). January 2003.

Form 3-4 Runoff Reduction Calculator for Site Design Measures on Regulated Projects

[1]DMA ID No.			1		2		3		4	
Site Design Measure	Runoff Reduction Parameters			Runoff Reduction (ft^3)		Runoff Reduction (ft^3)		Runoff Reduction (ft^3)		Runoff Reduction (ft^3)
[2] Adjacent/On-Site Stream Setbacks and Buffers	A_{imp} (ft^2)	*impervious drainage area*		0		0		0		0
	V_{85} (in)	*runoff volume from 85th percentile, 24-hour storm*	1.0		1.0		1.0		1.0	
[3] Soil Quality Improvement and Maintenance	A_{pond} (ft^2)	*ponding area*		0		0		0		
	D_{pond} (ft)	*ponding depth*								
	A_{sa} (ft^2)	*soil amendment area*								
	D_{sa} (ft)	*depth of amended soil*								
	n	*porosity of amended soil*								
[4] Tree Planting and Preservation	n_e	*number of new evergreen trees*		0		0		0	2	36
	n_d	*number of new deciduous trees*								
	A_{tc} (ft^2)	*canopy area of existing trees to remain on the property*								
	V_{85} (in)	*runoff volume from 85th percentile, 24-hour storm*	1.0		1.0		1.0		1.0	
[5] Rooftop and Impervious Area Disconnection	A_{imp} (ft^2)	*impervious drainage area*		0	2910	240		0		0
	V_{85} (in)	*runoff volume from 85th percentile, 24-hour storm*	1.0		1.0		1.0		1.0	
[6] Porous Pavement	A_{res} (ft^2)	*area of gravel storage layer*		0		0		0		0
	D_{res} (ft)	*depth of gravel storage layer*								
	n_{agg}	*porosity of aggregate*								
	C	*efficiency factor*								
[7] Vegetated Swales	A_{imp} (ft^2)	*impervious drainage area*	1310	108		0	1100	91		0
	V_{85} (in)	*runoff volume from 85th percentile, 24-hour storm*	1.0		1.0		1.0		1.0	
[8] Rain Barrels and Cisterns	N	*number of rain barrels and/or cisterns*	10	250		0		0		0
	V_a (ft^3)	*volume of each rain barrel and/or cistern*	50							
[9] Do all Site Design Measures meet the design requirements outlined in the Fact Sheets?					Yes	X	No			
[10] Total Volume Reduction (ft^3)			358		240		91		36	
[11] Effective Treated Impervious Area (ft^2)			3906		2619		990		392	

Form 3-5 Computation of Water Quality Design Criteria for Stormwater Treatment and Baseline Hydromodification Measures

DMA ID No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
[1]Total impervious area requiring treatment	1310	2910	1100	3905																	
[2] Impervious area untreated by Site Design Measures (ft^2) *Item 1 – Form 3-4 Item 11*	0	291	110	3513	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
[3]Additional pervious area draining to BMP (ft^2)	0	800	1200	500																	
[4] Composite DMA Runoff Coefficient (Rc) *Enter area weighted composite runoff coefficient representing entire DMA*	0.90	0.70	0.50	0.80																	
[5] Water Quality Volume (WQV) (ft^3) *WQV = 1/12 * [Item 2 + Item 3) *Item 4] * Unit WQV*	0	57	49	241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
[6] Water Quality Flow (WQF) (cfs) *WQF = 1/43,200 * [0.2* (Item 2 + Item 3) * Item4]*	0.000	0.004	0.003	0.015	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

DMA ID No.	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43
[1]Total impervious area requiring treatment																					
[2] Impervious area untreated by Site Design Measures (ft^2) *Item 1 – Form 3-4 Item 11*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
[3]Additional pervious area draining to BMP (ft^2)																					
[4] Composite DMA Runoff Coefficient (Rc) *Enter area weighted composite runoff coefficient representing entire DMA*																					
[5] Water Quality Volume (WQV) (ft^3) *WQV = 1/12 * [Item 2 + Item 3) *Item 4] * Unit WQV*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
[6] Water Quality Flow (WQF) (cfs) *WQF = 1/43,200 * [0.2* (Item 2 + Item 3) * Item4]*	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Form 3-6 Volume-Based Infiltrating Bioretention Measures

[1]**DMA ID No.** *If combining multiple DMAs from Form 3-5, enter a new unique DMA ID No.*	**DMA1-3**	**DMA4**		
[2]WQV (ft^3) *Item 5 in Form 3-5* *If combining multiple DMAs from Form 3-5, enter the sum of their respective WQVs.*	87	262		
[3]Surface Loading Rate *Maximum 5.0 in/hr*	5	5		
[4]BMP Surface Area (ft^2) *Top of BMP*	150	225		
[5]Infiltration rate of underlying soils (in/hr)	0.12	0.12		
[6]Maximum ponding depth (ft) *BMP specific, see BMP design details*	0.5	0.5		
[7]Ponding Depth (ft) d_{BMP} *= Minimum of (1/12 * Item 5 * 48 hrs) or Item 6*	0.5	0.5	-	-
[8]Infiltrating surface area, SA_{BMP} (ft^2) *Bottom of BMP*	75	225		
[9]Planting media depth, d_{media} (ft)	1.5	1.5		
[10]Planting media porosity	0.30	0.30		
[11]Gravel depth, d_{media} (ft) *Only included in certain BMP types*	1.0	1.0		
[12]Gravel porosity	0.30	0.30		
[13]Retention Volume (ft^3) $V_{retention}$ *= Item 8 * [Item7 + (Item 9 * Item 10) + (Item 11 * Item 12) + (1.5* (Item 5 / 12))]*	92.3	276.8	-	-
[14]Untreated Volume (ft^3) $V_{untreated}$ *= Item 2 – Item 13* *If greater than zero, adjust BMP sizing variables and re-compute retention volume*	0	0	0	0
[15]Treated Flow Rate (ft^3/s) $Q_{treated}$ *= 1/43,200*(Item 3 * Item 4)*	0.0174	0.0260	0.0000	0.0000
[16]Total Treated Flow Rate for Project (ft^3/s) Q_{total} *= Sum of Item 15 for all DMAs*	0.043			
[17]Is WQV for each DMA treated on-site?	**Yes**	**X**	**No**	

Form 5-1 BMP Inspection and Maintenance		
BMP	**Inspection Point and Frequency**	**Maintenance Activity Required**
Rain Barrels	Roof drains/Annual	Remove debris
	Barrels/Annual	Repair leaks
	Irrigation piping/Annual	Repair leaks
Veg Swale	Embankments and channel invert/Annual or as needed	Repair erosion problems, remove debris and sediment.
Bioretention facility in parking lot	Inlets and Outlets/Twice a year	Remove debris
	Plants/Monthly	Irrigate, weed control, replace dead plants
	Overflow structure/Twice a year	Remove debris to unclog

Form 6-1 Post-Construction Stormwater BMPs

Following is a summary of all BMPs included in the Project design. This checklist must be included on the cover sheet of the Improvement Plans for all Regulated Projects.

BMP		Plan Sheet Number(s)
Structural Source Controls (list BMPs)	**Refuse bins**	**C3**
	Floor drains	**C6**
Site Design Measures	Stream Setbacks and Buffers	
	Soil Quality Improvement and Maintenance	
	Tree Planting and Preservation	**C4**
	Rooftop and Impervious Area Disconnection	**C4**
	Porous Pavement	
	Vegetated Swales	**C5**
	Rain Barrels and Cisterns	**C2**
Stormwater Treatment and Baseline Hydromodification Measures	Bioretention with Infiltration	**C8 and Detail 1**
	Flow-Through Planters, Tree Box Filters and Media Filters	
Hydromodification Management Measures	Supplemental Detention	

Hydromodification Management Project

Post-Construction
Storm Water Quality Plan

For:

Big Box Store #3
Placer County
Planning Permit No. 2

Prepared for:

Joe Jones
CEO
Big Box Inc
2000000 Baseline Rd
Placer, CA 99999
999-999-9999

Prepared by:

Stormwater Nomore Inc
1 Water Way
Placer, CA 99999
888-888-8888

Preparation Date: March 15, 2016

Approval Date:_____

Section 1 General Project Information

The undersigned owner of the subject property, is responsible for the implementation of the provisions of this plan, including ongoing operations and maintenance (O&M), consistent with the requirements of the West Placer Storm Water Quality Design Manual and the State of California Phase II Small MS4 General Permit (Order No: 2013-0001-DWQ). If the undersigned transfers its interest in the property, its successors-in-interest shall bear the aforementioned responsibility to implement the SWQP.

For all Regulated Projects (As identified in Form 1-2 below), the undersigned owner hereby grants access to all representatives of the Jurisdictional Agency for the sole purpose of performing O&M inspections of the installed treatment system(s) and hydromodification control(s) if any.

A copy of the final signed and fully approved SWQP shall be available on the subject site for the duration of construction and then stored with the project approval documentation and improvement plans in perpetuity.

Form 1-1 Project Identification and Owner's Certification

Project Site Address:	2000000 Baseline Rd	
Owner Name:	Joe Jones	
Title	CEO	
Company	Big Box Inc	
Address	2000000 Baseline Rd	
City, State, Zip Code	Placer, CA 99999	
Email	Joe@emailcom	
Telephone #	999-999-9999	
Signature	Date	
Engineer:*	Phillip Waters, P.E.	PE Stamp* (Required for all Regulated Projects)
Title	Lead Engineer	
Company	Stormwater Nomore Inc	
Address	1 Water Way	
City, State, Zip Code	Placer, CA 99999	
Email	Phil@email.com	
Telephone #	888-888-8888	
Signature		
Brief Description of Project: (Attach additional sheets as necessary)	New big box store and parting lot.	

* Not required for Small Projects as determined in Form 1-2 below. Project owners are responsible for ensuring that all storm water facilities are designed by an appropriately licensed and qualified professional.

Form 1-2 Project Category	
Development Category (Select all that apply)	
[1]**Small Project** – All projects, except LUPs, that create and/or replace between 2,500-5,000 ft^2 of impervious surface or detached single family homes that create and/or replace 2,500 ft^2 or more of impervious surface and are not part of a larger plan of development.	
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[8]**Regulated Road or linear underground/overhead project (LUP)** creating 5,000 ft^2 or more of newly constructed contiguous impervious surface.	
[9]Enter total new and/or replaced impervious surface (ft^2)	
[10]**Regulated Hydromodification Management Project** – Regulated projects that create and/or replace 1 acre or more of impervious surface. A project that does not increase impervious surface area over the pre-project condition is not a hydromodification management project.	X
[11]Enter total new and/or replaced impervious surface (ft^2)	392,040

Section 3 Regulated Projects

Section 3 forms are to be completed for all Regulated Projects.

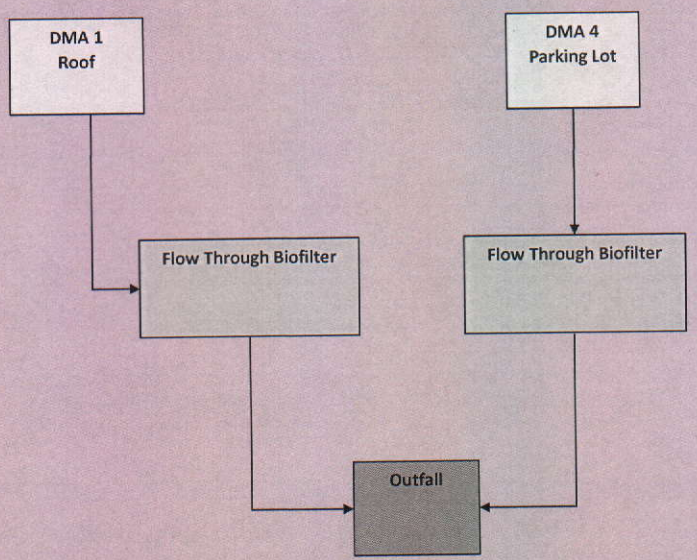
Form 3-1 Site Location and Hydrologic Features

Site coordinates: *Take GPS measurement at approximate center of site*	[1] Latitude	[2] Longitude	[3] Elevation (ft. above sea level)	[4] 85th Percentile, 24 Hour Design Storm Depth (in):
	xx	xx	500	0.9

[5] Receiving waters *Name of stream, lake or other downstream waterbody to which the site runoff eventually drains*	Folsom Lake
[6] 303(d) listed pollutants of concern *Refer to State Water Resources Control Board website* www.waterboards.ca.gov/water_issues/programs/water_quality_assessment/#impaired	Mercury
[7] Is Project going to be phased? *If yes, ensure that the SWQP evaluates each phase with distinct DMAs, requiring LID BMPs to address runoff at time of completion.*	No

[8] *Use this form to show a conceptual schematic depicting DMAs and conveyance features connecting DMAs to the site outlet(s). An example is provided below that can be modified for the proposed project or a drawing clearly showing DMAs and flow routing may be attached.*

Example only
Modify for project specific SWQP
Use separate sheet if necessary



Form 3-2 Site Assessment and Layout Documentation

	Has this Item been considered in the Site Layout and depicted in the Site Plan?	
	Yes	Not Applicable (Include brief explanation)
Define the development envelope and protected areas, identifying areas that are most suitable for development areas to be left undisturbed.		NA, previous ag land. All areas are similar
Concentrate development on portions of the site with less permeable soils and preserve areas that can promote infiltration.		NA, conforming to local impervious coverage ordinances
Limit overall impervious coverage of the site with paving and roofs.		NA, no creeks or wetlands nearby
Set back development from creeks, wetlands, and riparian habitats.		NA, no trees or native vegetation present
Preserve significant trees.		NA, site is graded flat from previous use
Conform site layout along natural landforms.		NA, previously graded for ag use.
Avoid excessive grading and disturbance of vegetation and soils.		NA, previously graded flat for ag use.
Replicate the site's natural drainage patterns.	x	
Detain and retain runoff throughout the site.	x	

Attach a Site Plan that incorporates the applicable considerations above. Ensure that the following items are included in the Site Plan:

Site Boundary
Soil types and areal extents, test pit and infiltration test locations
Topographic data with 1 ft. contours
Existing natural hydrologic features (depressions, watercourses, wetlands, riparian corridors)
Environmentally sensitive areas and areas to be preserved.
Proposed locations and footprints of improvements creating new, or replaced, impervious surfaces
Potential pollutant sources and locations
Entire site divided into separate DMAs with unique identifiers
Existing and proposed site drainage network with flow directions and site run-on and discharge locations
Proposed design features and surface treatments used to minimize imperviousness and reduce runoff
Proposed locations and footprints of treatment and hydromodification management facilities
Design features for managing authorized non-stormwater discharges
Areas of soil and/or groundwater contamination
Existing utilities and easements
Maintenance areas


500'x 19'
Biofilter
300'x 17'
Biofilter
Project Outlet
Building Footprint
(DMA 1)
6 acres
Parking Lot
(DMA 2)
3 acres
Legend
Storm Drain
Proposed Project Area
Feet
0
200
400

Form 3-3 Source Control Measures

Potential Pollutant Generating Activity or Source	Check One		Describe the source control measures to be implemented for each potential pollutant generating activity or source present on the project as listed in Appendix C and in the CASQA Fact Sheets. Include any special features, materials, or methods of construction that will be used.
	Present	Not Applicable	
Accidental spills or leaks	☑	☐	All materials will be stored inside and properly sealed.
Interior floor drains	☑	☐	Floor drains in basement connect to sanitary sewer.
Parking/storage areas and maintenance	☑	☐	Parking lot to be swept monthly.
Indoor and structural pest control	☑	☐	All materials will be stored inside and properly sealed.
Pools, spas, ponds, decorative fountains, and other water features	☐	☑	
Landscape/outdoor pesticide use	☑	☐	All manufacturer recommendations and regulations will be followed. Minimum amounts will be used.
Restaurants, grocery stores, and other food service operations	☐	☑	
Refuse areas	☑	☐	Trash bins to be closed and locked.
Industrial Processes	☑	☐	Lumber processing and storage yard. No direct drains to storm drainage system. Outdoor areas swept daily. Staining activities
Outdoor storage of equipment or materials	☑	☐	All material storage areas are covered with secondary containment.
Vehicle and equipment cleaning	☐	☑	
Vehicle and equipment repair and maintenance	☐	☑	
Fuel dispensing areas	☐	☑	
Loading docks	☑	☐	Drains to sump. Sump is cleaned as needed and materials disposed of at landfill, or in sanitary sewer.
Fire sprinkler test water	☑	☐	To be disposed in sanitary sewer.
Drain or wash water from boiler drain lines, condensate drain lines, rooftop equipment, drainage sumps, and other sources	☑	☐	To be disposed in sanitary sewer.
Unauthorized non-storm water discharges	☐	☑	
Building and grounds maintenance	☑	☐	Landscape maintenace to use minimal fertilizers.

The source control measures identified in this table shall be designed consistent with recommendations from the CASQA Stormwater BMP Handbook for New Development and Redevelopment[1], or from another equivalent manual.

[1] California Stormwater BMP Handbook New Development and Redevelopment. California Stormwater Quality Association (CASQA). January 2003.

Form 3-4 Runoff Reduction Calculator for Site Design Measures on Regulated Projects

[1]DMA ID No.			1		2		3		4	
Site Design Measure	Runoff Reduction Parameters			Runoff Reduction (ft^3)		Runoff Reduction (ft^3)		Runoff Reduction (ft^3)		Runoff Reduction (ft^3)
[2] Adjacent/On-Site Stream Setbacks and Buffers	A_{imp} (ft^2)	*impervious drainage area*		0		0		0		0
	V_{85} (in)	*runoff volume from 85th percentile, 24-hour storm*	0.8		0.8		0.8		0.8	
[3] Soil Quality Improvement and Maintenance	A_{pond} (ft^2)	*ponding area*		0		0		0		
	D_{pond} (ft)	*ponding depth*								
	A_{sa} (ft^2)	*soil amendment area*								
	D_{sa} (ft)	*depth of amended soil*								
	n	*porosity of amended soil*								
[4] Tree Planting and Preservation	n_e	*number of new evergreen trees*		0		0		0		0
	n_d	*number of new deciduous trees*								
	A_{tc} (ft^2)	*canopy area of existing trees to remain on the property*								
	V_{85} (in)	*runoff volume from 85th percentile, 24-hour storm*	0.8		0.8		0.8		0.8	
[5] Rooftop and Impervious Area Disconnection	A_{imp} (ft^2)	*impervious drainage area*		0		0		0		0
	V_{85} (in)	*runoff volume from 85th percentile, 24-hour storm*	0.8		0.8		0.8		0.8	
[6] Porous Pavement	A_{res} (ft^2)	*area of gravel storage layer*		0		0		0		0
	D_{res} (ft)	*depth of gravel storage layer*								
	n_{agg}	*porosity of aggregate*								
	C	*efficiency factor*								
[7] Vegetated Swales	A_{imp} (ft^2)	*impervious drainage area*		0		0		0		0
	V_{85} (in)	*runoff volume from 85th percentile, 24-hour storm*	0.8		0.8		0.8		0.8	
[8] Rain Barrels and Cisterns	N	*number of rain barrels and/or cisterns*		0		0		0		0
	V_a (ft^3)	*volume of each rain barrel and/or cistern*								
[9] Do all Site Design Measures meet the design requirements outlined in the Fact Sheets?					Yes		No	X		
[10] Total Volume Reduction (ft^3)			0		0		0		0	
[11] Effective Treated Impervious Area (ft^2)			0		0		0		0	

Form 3-5 Computation of Water Quality Design Criteria for Stormwater Treatment and Baseline Hydromodification Measures

DMA ID No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
[1]Total impervious area requiring treatment	261360	130680																				
[2] Impervious area untreated by Site Design Measures (ft^2) *Item 1 – Form 3-4 Item 11*	261360	130680	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
[3]Additional pervious area draining to BMP (ft^2)	0	0																				
[4] Composite DMA Runoff Coefficient (Rc) *Enter area weighted composite runoff coefficient representing entire DMA*	0.90	0.90																				
[5] Water Quality Volume (WQV) (ft^3) *WQV = 1/12 * [Item 2 + Item 3) *Item 4] * Unit WQV*	14702	7351	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
[6] Water Quality Flow (WQF) (cfs) *WQF = 1/43,200 * [0.2* (Item 2 + Item 3) * Item4]*	1.089	0.545	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

DMA ID No.	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
[1]Total impervious area requiring treatment																						
[2] Impervious area untreated by Site Design Measures (ft^2) *Item 1 – Form 3-4 Item 11*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
[3]Additional pervious area draining to BMP (ft^2)																						
[4] Composite DMA Runoff Coefficient (Rc) *Enter area weighted composite runoff coefficient representing entire DMA*																						
[5] Water Quality Volume (WQV) (ft^3) *WQV = 1/12 * [Item 2 + Item 3) *Item 4] * Unit WQV*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
[6] Water Quality Flow (WQF) (cfs) *WQF = 1/43,200 * [0.2* (Item 2 + Item 3) * Item4]*	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Form 3-6 Volume-Based Infiltrating Bioretention Measures				
[1]**DMA ID No.** *If combining multiple DMAs from Form 3-5, enter a new unique DMA ID No.*				
[2]WQV (ft^3) *Item 5 in Form 3-5* *If combining multiple DMAs from Form 3-5, enter the sum of their respective WQVs.*				
[3]Surface Loading Rate *Maximum 5.0 in/hr*				
[4]BMP Surface Area (ft^2) *Top of BMP*				
[5]Infiltration rate of underlying soils (in/hr)				
[6]Maximum ponding depth (ft) *BMP specific, see BMP design details*				
[7]Ponding Depth (ft) d_{BMP} = *Minimum of (1/12 * Item 5 * 48 hrs) or Item 6*	-	-	-	-
[8]Infiltrating surface area, SA_{BMP} (ft^2) *Bottom of BMP*				
[9]Planting media depth, d_{media} (ft)				
[10]Planting media porosity				
[11]Gravel depth, d_{media} (ft) *Only included in certain BMP types*				
[12]Gravel porosity				
[13]Retention Volume (ft^3) $V_{retention}$ = *Item 8 * [Item7 + (Item 9 * Item 10) + (Item 11 * Item 12) + (1.5* (Item 5 / 12))]*	-	-	-	-
[14]Untreated Volume (ft^3) $V_{untreated}$ = *Item 2 – Item 13* *If greater than zero, adjust BMP sizing variables and re-compute retention volume*	0	0	0	0
[15]Treated Flow Rate (ft^3/s) $Q_{treated}$ = *1/43,200*(Item 3 * Item 4)*	0.0000	0.0000	0.0000	0.0000
[16]Total Treated Flow Rate for Project (ft^3/s) Q_{total} = *Sum of Item 15 for all DMAs*				
[17]**Is WQV for each DMA treated on-site?**	**Yes**		**No**	**X**

Form 3-7 Flow-Through Planters, Tree Box and Media Filters				
[1]**DMA ID No.** *If combining multiple DMAs from Form 3-5, enter a new unique DMA ID No.*	**DMA 1**	**DMA 2**		
[2]WQF (ft3/s) *Item 6 in Form 3-5* *If combining multiple DMAs from Form 3-5, enter the sum of their respective WQFs.*	1.0890	0.5450		
[3]Surface Loading Rate *Maximum 5.0 in/hr*	5.0	5.0		
[4]Maximum Ponding Depth (ft) *BMP Specific, see BMP design details*	0.5	0.5		
[5]Soil/Media Surface Area (ft^2) *Top of BMP*	9410	4750		
[6]Soil/Media Depth (ft)	1.50	1.50		
[7]Soil/Media porosity	0.30	0.30		
[8]Gravel Depth (ft)	1.00	1.00		
[9]Gravel porosity	0.30	0.30		
[10]Detention Volume (ft^3) *Vd = Item 5 * [Item4 + (Item 6 * Item 7) + (Item 8 * Item 9) + (3* (Item 3 / 12))]*	23,525.00	11,875.00	0.00	0.00
[11]Manufacturers' specified flow rate for proprietary devices (ft3/s) (attach a copy of the product specifications)				
[12]Treated Flow Rate (ft^3/s) $Q_{treated}$ *= 1/43,200*(Item 3 * Item 5) or Item 11*	1.0891	0.5498	0.0000	0.0000
[13]Untreated Flow Rate (ft^3/s) $Q_{untreated}$ *= Item 2 - Item 12* *If greater than zero, adjust BMP sizing variables and re-compute treated flow*	0.0000	0.0000	0.0000	0.0000
[14]Total Treated Flow Rate for Project (ft^3/s) Q_{total} *= Sum of Item 12 for all DMAs*	1.64			
[15] Is WQF for each DMA treated on-site?	**Yes**	**X**	**No**	

Section 4
Regulated Hydromodification Management Projects

Form 4-1 Peak Runoff Response Time

(Complete Section 4 forms for Regulated Hydromodification Projects only)

Determine total runoff response time for pre- and post-construction conditions at each project outlet.

Variables	Pre-construction DMAs to Project Outlet				Post-construction DMAs to Project Outlet			
	1	2	3	4	1	2	3	4
[1]Length of longest overland flow path *Not to exceed 100 ft*	100				0			
[2]Slope of overland flow path (ft/ft)	0.0050							
[3]Manning's roughness coefficient for overland flow surface *See Table 5-5 of the Placer County SWMM*	0.4000							
[4]Overland flow response time (min) (0.355*(Item 1*Item 3)$^{0.5}$)/(Item 2$^{0.3}$)	16	-	-	-	-	-	-	-
[5]Hydrologic Soil Group *Refer to Section 3.1.1. or NRCS Web Soil Survey*	D							
[6]Current Land Cover Type(s) *Select from categories shown in Table 5-3 of the SWMM*	Fallow							
[7]Pervious Area Condition: *Based on the extent of vegetated cover Good >75%; Fair 50-75%; Poor <50% Attach photos of site to support rating*	Poor							
[8]Infiltration Rate (in/hr) *Refer to Table 5-3 of the SWMM using Items 3, 4, and 5 above or obtain site specific field measurements (See Section 3.1.1)*	0.03							
[9]Length of collector flow (ft)	700				800			
[10]Cross-sectional area of collector flow facility (ft^2)	1.00				7.00			
[11]Wetted perimeter of collector flow facility (ft)	3.50				9.40			
[12]Manning's roughness of collector flow facility	0.0400				0.0100			
[13]Slope of collector flow facility (ft/ft)	0.0050				0.0050			
[14]Channel flow velocity (ft/sec) *V = (1.49 / Item 12) * (Item 10/Item 11)^0.67 * (Item 13)^0.5*	1.1	-	-	-	8.7	-	-	-
[15]Collector flow facility response time (min) *T_c = Item 9 /(Item 14 * 60)*	10.2	-	-	-	1.5	-	-	-
[16]Total runoff response time or T_t (min) *T_t = Item 4 + Item 15*	26.1	-	-	-	1.5	-	-	-

Form 4-2 Hydromodification Target for Peak Runoff

Variables	Pre-construction DMAs to Project Outlet				Post-construction DMAs to Project Outlet			
	1	2	3	4	1	2	3	4
[1] Drainage Area (ft^2) *Sum of all outlet level DMAs should equal total project area.*	392,040				392,040			
[2] Impervious Area (ft^2) *Sum of all outlet level DMAs should equal total project impervious area.*	0				392,040			
[3] Rainfall depth for 2yr storm with duration equal to response time (in) *See Placer County SWMM Table 5-A-1 for elevation of site and duration equal to response time*	0.32				0.13			
[4] Unit peak runoff (cfs/acre) *q = 60/Form 4-1 Item 16 * Item 3*	0.73	-	-	-	5.06	-	-	-
[5] Infiltration factor (cfs/acre) *F_i = Form 4-1 Item 8 * (1 + 1 /(1.3 + 0.0005 * Form 3-1 Item 3))*	0.05	-	-	-	-	-	-	-
[6] Peak runoff from DMAs (cfs) *Q_p = Item 1 * Item 4 – Item 5 * (Item 1 - Item 2)*	6.22	-	-	-	45.95	-	-	-
[7] Total Pre-Project Peak Runof (ft^3/s) *Q_{total} = Sum of Item 6 for all Pre-construction DMAs*	6.22							
[8] Is the total post-project peak runoff equal to or less than the total pre-project peak runoff? *Yes, if Item 7 is greater than or equal to the sum of the Total Treated Flow Rates from Form 3-6 Item 16 and 3-7 Item 12.*	YES							

Form 4-3 Detention Volumes for Hydromodification Management

	Post-construction DMAs to Project Outlet			
	1	2	3	4
[1] Land cover and hydrologic condition *See NRCD TR-55 Manual Table 2-2 for types*	Industrial			
[2] Hydrologic Soil Group *Refer to Section 3.1.1. or NRCS Web Soil Survey*	-	-	-	-
[3] Drainage Area (A) (ft^2)	392,040	-	-	-
[4] Curve Number (CN) *Use Items 1 and 2 to select curve number from NRCS TR-55 Manual Table 2-2*	98			
[5] Post-development soil storage capacity, S (in): *S = (1000 / Item 4) – 10*	0.2	#DIV/0!	#DIV/0!	#DIV/0!
[6] Precipitation for 2-yr, 24-hr storm (in) *See Placer County SWMM Table 5-A-1 for elevation of site and 24-hr duration depths*	1.90			
[7] Post-developed runoff volume for 2-yr – 24-hour storm, V_{runoff} (ft^3): *V_{runoff} = Item 3 * (1 / 12) * [(Item 6 – 0.2 * Item 5)^2 / (Item 6 + 0.8 * Item 5)]*	54,732	#DIV/0!	#DIV/0!	#DIV/0!
[8] Attenuation Factor, $q_{out/in}$ (ratio of target outflow rate to peak inflow rate): *$q_{out/in}$ = Form 4-2 Item 6 Pre-Construction / Form 4-2 Item 6 Post-Construction*	0.14	#DIV/0!	#DIV/0!	#DIV/0!
[9] Equalization Factor, Vs/Vr (ratio of storage capacity to runoff volume) *Vs/Vr obtained using Item 8 and nomograph in Figure 6-1 of NRCS TR-55 Manual for Rainfall Type IA*	0.40			
[10] Runoff detention capacity to achieve hydromodification management criteria (ft^3) *$D_{hydromod}$ = Item 7 * Item 9*	21893	#DIV/0!	#DIV/0!	#DIV/0!
[11] Site Design Measure (SDM) Volume (ft^3): *Sum of Item 10 in Form 3-4 for all SDMs in this DMA.*	0			
[12] Bioretention Volume (ft3): *Sum of Item 14 in Form 3-6 for all bioretention measures in this DMA.*	0			
[13] Flow-Through Detention Volume (ft3): *Sum of Item 10 in Form 3-7 for all flow-through facilities in this DMA.*	35400			
[14] Supplemental Detention Volume (ft^3):	0			
[15] Combined Detention Volume in this DMA (ft^3): *Sum of Items 11 through 14*	35,400	-	-	-
[16] Is detention capacity to achieve hydromodification management criteria achieved at all project outlets? *Yes, if Item 10 is less than or equal to Item 15. If not provide additional storage capacity*	**Yes**	**X**	**No**	

Form 5-1 BMP Inspection and Maintenance		
BMP	**Inspection Point and Frequency**	**Maintenance Activity Required**
Biofilters	Inlets and outlets/annually	Remove debris as needed
	Surface of filter bed/annually and after large storms	Remove accumulations to restore filtration rate as needed
	Vegetation	Remove weeds, replace dead plants

Form 6-1 Post-Construction Stormwater BMPs

Following is a summary of all BMPs included in the Project design. This checklist must be included on the cover sheet of the Improvement Plans for all Regulated Projects.

BMP		Plan Sheet Number(s)
Structural Source Controls (list BMPs)	**Loading dock containment**	**C1**
	Refuse area cover	**C2**
	Floor drain sump	**C3**
Site Design Measures	Stream Setbacks and Buffers	
	Soil Quality Improvement and Maintenance	
	Tree Planting and Preservation	
	Rooftop and Impervious Area Disconnection	
	Porous Pavement	
	Vegetated Swales	
	Rain Barrels and Cisterns	
Stormwater Treatment and Baseline Hydromodification Measures	Bioretention with Infiltration	
	Flow-Through Planters, Tree Box Filters and Media Filters	**C5 and D 5**
Hydromodification Management Measures	Supplemental Detention	**C6 and D6**